

REMARKS/ARGUMENTS

Claims 7, 13, 15 and 17 have been amended; claims 25-31 have been added and claims 1-6, 8-12, 14, 16 and 18-24 remain unchanged. Thus, claims 1-31 are pending.

Claims 1, 5, 6, 8, 12, 15, 16, 18 and 23 stand rejected under 35 U.S.C. 102(b) as being anticipated by Lee (5,785,796).

Claims 2, 3, 4, 9, 10 and 11 stand rejected under 35 U.S.C. 103(a) as being obvious in view of Lee (5,785,796).

As amended, all pending claims of the subject application comply with all requirement of 35 U.S.C. Accordingly, Applicants request examination and allowance of all pending claims.

Formal Matters

Applicants note with appreciation the Examiner's acknowledgement that claims 7, 13, 14, 15 and 17 would be allowable if rewritten in independent form. In response, Applicants have amended claims 7, 13, 15 and 17 to include all the limitations of the claims from which each depends. Claim 14 has not been amended since it depends from claim 13. Accordingly, Applicants request allowance of claims 7, 13-15 and 17.

Rejections under 35 U.S.C. § 102(b) and 103(a) in view of Lee

Claims 1, 5, 6, 8, 12, 15, 16, 18 and 23 stand rejected under 35 U.S.C. 102(b) as being anticipated by Lee (5,785,796) while claims 2, 3, 4, 9, 10 and 11 stand rejected under 35 U.S.C. 103(a) as being obvious in view of Lee (5,785,796). These rejections are respectfully traversed.

Embodiments of the invention provide for an improved process of depositing a high temperature dielectric layer and subsequently cleaning the deposition chamber from unwanted deposits. As stated in the Background of the Invention section of the present application, many commercially available deposition chambers include interior surfaces comprising aluminum, aluminum oxide or aluminum nitride. Such materials may react with fluorine species during a chamber clean step that occurs subsequent to the deposition resulting in the formation of AlO:F and/or AlF_x films on the surface of the interior chamber surface which may result in process drift and/or particle contamination. See Specification, page 2, paragraph [0004]. Such problems are particularly noticeable in high temperature deposition processes such as processes where the substrate temperature reaches at least 510°C.

The invention of claim 1 provides a solution to this issue by reducing the temperature of the substrate during the deposition of the dielectric layer from a first temperature of at least 510°C to a second, lower temperature. The Office Action states Lee et al. teaches this aspect of the claimed invention because "cleaning and etching takes place at a lower temperature than [formation of a thermal oxide, which is well known to be formed at least at the claimed temperature]". The Office Action refers to col. 22, line 66 and Table 1 at col. 24 for support for these positions.

Applicants respectfully assert that Lee et al. does not teach or suggest reducing the temperature of the substrate during the deposition of the dielectric layer as required by the invention of claim 1. Applicants have carefully reviewed the portions of Lee et al. referenced in the Office Action as supporting this teaching and note that the paragraph starting at col. 22, line 66 discusses a technique for cooling the gas supply header of a deposition chamber while Table 1 discloses various temperatures at which materials that are often used in deposition chambers exhibit resistance to corrosion from ClF₃. Applicants respectfully assert that there is nothing in these portions of Lee et al. or any other portion of Lee et al. for that matter that discloses or suggests reducing the temperature of the substrate during the deposition of the dielectric layer as recited in claim 1. If the Examiner disagrees, Applicants respectfully request that the Examiner specifically point out where in the Lee et al. reference this aspect of the invention of claim 1 is taught or suggested.

In view of the above, Applicants respectfully request withdrawal of the Section 102 rejection of claim 1 and allowance of claim 1 and all claims that depend from claim 1. Applicants further note that independent claims 8 and 18 each include similar recitations on reducing the temperature of the substrate during the deposition of a dielectric layer and thus are allowable over the applied prior art for at least the same reasons as claim 1.

New Claims

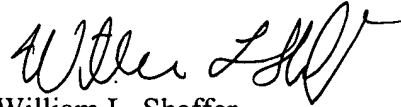
New claims 25-31 have been added to secure an appropriate scope of protection for the present invention. Examination and allowance of the these claims is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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